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By S. C. ROBERTS, F.C.W.A., M.I.E.E.

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A COST-FINDING CHART FOR INDUSTRY

A COST-FINDING CHART FOR INDUSTRY

By

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Introduction

THE "S. C. Roberts' Cost-finding Chart" has been described to varied groups of people from those without any previous knowledge of costing to those who have had considerable experience, and so many requests have been made that it should be made available to others who have an interest in the subject that this booklet is written for publication.

It should be stated at the outset that whilst the intention is expressly to explain briefly the treatment will be sufficiently adequate to enable the reader to make some comparisons with his own known conditions. A claim is made that the chart is applicable to any industry, an unusual feature when it is considered there are so many differences in the application of costing principles. The chart covers the differences in labour and material costing and offers many thoughts for the scientific distribution of overhead expenses.

It is admitted that another reason for publication is the sincere wish that the reader will find the subject interesting enough to whet the appetite, and so continue studies into the realms of cost accounting beyond that aspect dealt with in this booklet, namely, cost-finding.

"Cost-finding" is the popularly known purpose of the profession of cost accounting, but there is another function—cost control—which tries to ensure that the best value is obtained for all expenditure of the undertaking. This second function is certainly of greater importance; in fact, it can be stated that cost control embodies cost-finding, or that cost-finding occurs in the course of, and incidental to, cost control.

The author hopes that the cost-finding chart described herein will be of interest to varied classes of readers from the young student to the managing director faced with everyday problems and who can never receive too much information of a type which can be converted into practical use.

To assist appreciation of the cost-finding chart, there is an explanation of job and process costing systems and of the professional terms used. It will be easier for the reader to follow the description of the cost-finding chart if the chapters preceding are fully understood.

S. C. R.

the labour section applies to material. A great deal depends upon the understanding of the first panel. "Material and Stores Issues."

In the explanation of labour cost of capital extensions, it was shown that there was a transfer within the assets and, therefore, no expense to be included in cost. In the same way, the purchase of material for the store-room is a transfer within assets, the result being that the cash balance is reduced and the stock increased. The material expense does not occur until the material is issued over the store-room counter to a job or process and therefore the "Materials and Stores Issues" panel begins at this point—the issue of the material in exchange for a requisition bearing the name or number of the job or process to be charged with the cost. The requisition is passed to the stock control department for the purpose of booking out the material, then to the costing department for the entry of the price and insertion of value. It is not intended, as the immediate concern is cost-finding, to elaborate on the "Stock Control" panel which covers the interests of the planning and progress departments, and of cost control.

It was emphasised when dealing with labour that the balancing of the analysis with the pay-roll is an essential feature to ensure correct entries subsequently in the cost accounts. There is not such certainty in the case of material, but a check is usually made by totalling the requisitions received by the costing department and comparing the material analysis with this pre-total.

From the point of the analysis, material follows the same lines as labour, division into direct and indirect material, capital extensions and sundry sales. All these headings have been explained previously; direct and indirect materials under "Elements of Cost" and "Capital" and "Sundry Sales" under the first section of the chart.

It is shown in the chart how the direct material (that which is part of the product and directly chargeable) is taken down to the job or process and the product, whilst indirect material, like indirect labour, is in abeyance to be picked up again when dealing with overhead expenses.

Direct Deliveries

Special mention should be made of the practice in some factories of delivering materials direct to the manufacturing departments without passing through a store-room. It is

generally the rule in factories where job costing is applied that all materials must first be delivered to a store-room, and as a requisition must be presented for its issue, the costing department is duly notified. Occasionally, however, a heavy piece of material is delivered, as for example, a large machine-part ordered by the maintenance department, and as it is not practicable to take this to the store-room, delivery is made direct to the manufacturing department. Where job costing is in operation it is simple routine to book into the store-room "in theory," the costing department preparing the dummy requisition from the invoice and making the charge to the appropriate account in the normal way through the material analysis. This is a safe method to apply if almost all the materials follow one course.

In process costing factories it is usually the practice for all the manufacturing materials to be delivered direct to the first process department. As direct deliveries are numerous the costing department establishes routine to provide for charges direct to the process account without passing through the material analysis as explained under "Material and Stores Issues." The material analysis is in use, but only for small items of the nature of maintenance materials, tools, etc.

III.—The Chart: Overhead Cost

The third section of the chart, "Overhead Expenses" (or those expenses which cannot be charged directly to a job or process) will be dealt with under sub-headings as follows:

- (1) Collection of overhead expenses,
- (2) Classification of overhead expenses,
- (3a) Apportionment of factory overhead expenses to all departments,
- (3b) Apportionment of factory overhead expenses to manufacturing departments,
- (3c) Apportionment of factory overhead expenses to products,
- (4) Apportionment of selling and distribution overhead expenses to products.
- (5) Apportionment of administration overhead expenses to products.

(1) Collection of Overhead Expenses.

The two sources for the collection of overhead expenses mentioned, indirect labour and indirect material, together with invoices and financial accounts, constitute the four sources from which the overhead expenses are obtained.

Indirect labour and indirect material have been described: the statement was made that these items would be held in abeyance, and now discussing the collection of overhead expenses they are being taken up.

Invoices—the old fashioned word “bills” would be more correct—as the third source, represents the items of overhead expense ascertained from an outside source, such as rent, rates, telephone rentals, fire insurance, electricity, etc.

Financial accounts as the fourth source is another name for the book-keeping department and information concerning depreciation and bad debts (if it is the policy of the board to recover bad debts in costs) is passed on to the costing department for inclusion in overhead expenses.

(2) Classification of Overhead Expenses.

There are three panels in the chart following collection representing factory, selling and distribution, and administration overhead expenses. It is assumed for the purpose of explanation that the overhead expenses have been collected together from the four sources and now there is a large sum to be apportioned. The first step is the classification according to the three panels or divisions; each item must be studied as to whether the factory, or selling and distribution, or administration has had the benefit of the expenditure, or if common to all (as in the case of rent if all the offices and factory are in the same building), then apportioned in a fair manner.

Each of the three panels covers a field of activity, but, in practice, the classification largely amounts to determination whether factory or selling and distribution, the administration taking the remainder. Actually, there are few doubtful items, and some principle can usually be found to justify particular classification.

(3a) Apportionment of Factory Overhead Expenses to All Departments.

The next step in dealing with overhead expenses is to apportion factory overhead (only) to all the departments of the firm with emphasis on the word “all.”

The panel reads "Manufacturing and Service Departments" and it must be remembered that not only the departments where there is manufacturing and jobs and processes, but also service departments (i.e., boiler-house, canteen, etc.) share in the benefits of overhead expenses. The canteen, for example, occupies large floor area, probably as big as some of the manufacturing departments, and should, therefore, receive a share of rent.

Each item of factory overhead expense is studied to find a fair basis for apportionment, and it will be appreciated that in the case of a service department the charges constitute an expense account, providing useful information for control purposes.

(3b) Apportionment of Factory Overhead Expenses to Manufacturing Departments.

All items of factory overhead expenses having been charged to the departments, the next operation is the transfer of the expenses of the service departments to the manufacturing departments. Each service department is studied to ascertain the basis for transfer—how each serves the departments where job numbers and process numbers apply. The canteen cost is apportioned according to the number of workers in each manufacturing department, the boiler house cost according to steam supplied for heating and processes, etc.

(3c) Apportionment of Factory Overhead Expenses to Products

The present position being that the factory overhead has reached the manufacturing department, or those engaged on the product, the method to charge the product must be decided. Three methods are here described briefly, and it is a matter for close study of the local conditions which is most suitable.

The first method for consideration is the "Machine Hour Rate" method. It is a sound method if applied under correct conditions and the procedure is simple to follow. In the same way as the share of factory overhead expense for the machine shop as a manufacturing department has been determined (i.e., its own share of factory overhead expenses plus a share of the service department's costs) the shop is divided into sub-departments each being a group of machines of similar type.

The items of factory overhead expenses are again studied so that each sub-department or machine-group receives a fair share. Rent is apportioned to the group on the basis of space occupied within the machine shop, depreciation on the basis of value, etc.

The factory overhead total ascertained for the machine group is divided by the anticipated working-time, but the effective hours only, thus allowing for stoppages, breakdowns, cleaning, etc. The rate per hour is then applied according to the time occupied, namely, if the factory overhead expenses for the machine group equals £1,000 and 1,000 effective hours are anticipated in the same period, then at £1 per hour a job occupying the machine for six hours incurs a charge to the job number at £6.

The second method which may be used where there is hand-work is the "Production Hour Rate" method operating similarly to "Machine Hour Rate," but the division is by effective operator-hours instead of machine-hours. If the rate ascertained after allowing for stoppages, etc., is 2s. per hour, then a job done on the bench taking four operator-hours (or production-hours) entails a charge to the particular job number at 8s.

The third method is the "unit" method and is frequently used in process costing. The factory overhead expense for the department is divided by the anticipated number of articles (units) to be produced, and as each is delivered by the department the ascertained unit cost for factory overhead expense is added to the direct labour and direct material costs.

(4) Apportionment of Selling and Distribution Overhead Expenses to Products.

As shown in the chart the selling and distribution expenses are over and above the factory expenses. When possible an item of this type of expense is charged particularly to the line receiving the benefit, i.e., advertising one product, an exhibition for a special line, etc.

There remain certain expenses common to all products (sales manager's salary, rent of sales office, etc.) and a method of apportionment to the lines of products is according to the manufacturing cost values of each line. An example will be given under the next sub-heading.

(5) Apportionment of Administration Overhead Expenses to Products.

Few items will be specific as affecting a particular line ; the greater part will be included in costs according to manufacturing cost values on the basis that the management's responsibility varies in that proportion. An example follows :

Sales, 1,000 " A " articles at £1 each, factory cost	£1,000
Sales, 500 " B " articles at £2 each, factory cost...	£1,000
Selling and distribution expenses of direct benefit to " A "	£50
Selling and distribution expenses of direct benefit to " B "	£100
Selling and distribution expenses common to both..	£300
Administration expenses common to both	£160
Therefore, total cost :	

	" A "		" B "
	£		£
Factory cost	1,000	...	1,000
Specific S. and D. expenses	50	...	100
General S. and D. expenses on basis of factory cost	150	...	150
Administration Do.	80	...	80
	£1,280	...	£1,330
Total cost per article	£1.28	...	£2.66

Conclusion

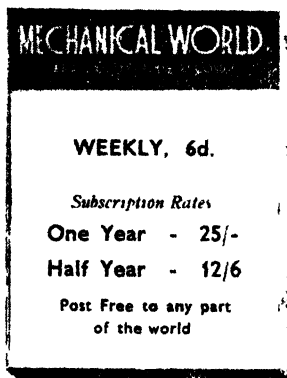
It will be observed in the chart that the charges reaching the product through job or process accounts are: direct labour, direct material (including direct deliveries), factory overhead expenses; and that expenses taken direct to the product are: selling and distribution expenses, administration expenses.

The reader has no doubt studied the application of known conditions of an individual firm and will now find it profitable to apply conditions of others as far as imagination will allow.

Costing is a most interesting subject and it is the experience of so many that the greater the knowledge, the more interesting it becomes.

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